REMARKS/ARGUMENTS

Reconsideration of the above-identified application, in view of the following remarks, is respectfully requested.

I Amendment To The Specification

The specification has been amended to recite the priority information for this application, as required by 37 C.F.R. §1.78. The time period in rule 78(2)(ii) does not apply to this application, since it is a national phase application (371) of an International application filed before November 29, 2000.

II Status Of The Claims

The Examiner is thanked for indicating that claims 1-16 contain allowable subject matter.

Claims 1, 4, and 7 have been amended to correct typographical errors, as requested by the Examiner. Claim 17 has been rewritten in independent form, and now recites the method step (b) cooling the electrolyte precursor. Claims 2, 5, 6, 11 and 17 have been amended to recite correct Markush group language. Support for these amendments may be found at page 7, lines 5-15, of the specification, and in the original claims. Additionally, the preferred embodiments recited in claims 4-8, 10-12 and 17 have been deleted and new claims 18-28, directed to these preferred embodiments have been added. Support for these new claims may be found in the specification at page 7, line 12, page 7, line 16 to page 8, line 22, page 8, lines 24-27, page 9, lines 2, 5-10 and 14-26, and in original claims 4-8, 10-12, and 17. No new matter has been added by these amendments.

Claims 1-28 are pending in the application and are currently under consideration.

III Claims Objections

Claims 1, 4 and 7 are objected to because of informalities. Applicants submit that the amendments to claims 1, 4 and 7 render these objections moot.

IV Rejection Under 35 U.S.C. § 112

Claims 2, 5, 6, 11, and 17 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite. The Examiner asserts that these claims contain improper Markush language.

Applicants submit that amended claims 2, 5, 6, 11, and 17 are no longer indefinite, and respectfully request that the rejections be withdrawn.

V Rejection Under 35 U.S.C. § 103

Claim 17 has been rejected under 35 U.S.C. § 103 as obvious over U.S. Patent No. 5,705,084 ("the '084 Patent") in view of U.S. Patent No. 6,080,511 ("the '511 Patent"). The Examiner asserts that Example IV of the '084 Patent teaches a polymer electrolyte formed by heating a mixture of solvent, $LiClO_4$ salt, polyvinylidenefluoride-hexafluoropropylene copolymer and polyethylene oxide to 90°C, then cooling to 27°C to gel the electrolyte. The '511 Patent is used as evidence that the method disclosed in Example IV of the '084 Patent results in a gelled electrolyte (semi-solid ion conductive layer). The Examiner concedes that the '084 Patent does not explicitly disclose the method limitation of heating the polymer mixture to a first temperature to dissolve the polymer then to a second higher temperature prior to cooling and gelling the polymer. However, the Examiner asserts that product-by-process limitations are obvious, in the absence of unexpected results, and concludes that whether the polymer is heated to a first

temperature and then to a second temperature (two steps), or just heated to the second temperature (one step), the product, as an end result, is the same.

This rejection is respectfully traversed. The method disclosed in the '084 and '511 Patents uses a single heating step, whereas the process limitation of present claim 17 requires two distinct and separate heating steps, with the polymer electrolyte being cooled in-between the two heating steps. While this difference may seem trivial at first blush, is it not.

When only one heating step is used, as taught by the cited references, it is necessary to maintain the electrolyte at the gelling temperature (typically 75-100°C) in order for the electrolyte to have a viscosity low enough for it to be successfully introduced into the cell, and properly distributed therein, with even wetting of the electrode. This high temperature needs to be maintained for several hours. Exposing the electrodes, electrolyte salts, and solvents to this high temperature for a long period of time decreases the performance of the cell, and can lead to destruction of the cell during the manufacturing process.

According to present claim 17, the electrochemical cell is obtained by a process wherein the electrolyte precursor is heated to the dissolution temperature (T_{dissol}) and subsequently cooled before being incorporated into the electrochemical cell. The electrolyte does not gel upon cooling after the first heating step, and can be successfully introduced into the electrochemical cell before being reheated to the gelation temperature (T_{gel}) in order to bring about gelling of the polymer electrolyte. Accordingly, by using the process recited in claim 17, exposure of the cell to sustained high temperatures is much less than in the process taught by the '084 and '511 Patents. This leads to better performance of the cell, and less risk of damaging the cell during manufacture.

The '084 and '511 patents do not teach or suggest an electrochemical cell made by a process wherein the electrolyte precursor is cooled before being

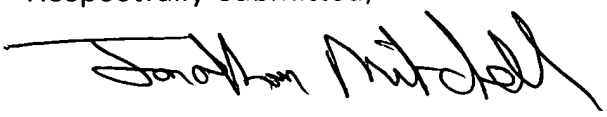
introduced into the cell. Furthermore, these references do not provide any motivation to prepare an electrochemical cell by a process whereby the electrolyte precursor is cooled before being introduced into the cell. The product-by-process limitations of claim 17 are thus not obvious over the cited art.

Accordingly, applicants respectfully submit that claim 17 is not obvious over the prior art, and that the withdrawal of this rejection is in order.

CONCLUSION

In view of the foregoing remarks, claim 17 is not obvious over the prior art. Claims 1-28 are believed to be in condition for allowance. Prompt and favorable action is earnestly solicited.

Respectfully submitted,



Jonathan P. Mitchell, Ph.D.
Reg. No. 50,239
Agent for Applicants

DARBY & DARBY, P.C.
Post Office Box 5257
New York, NY 10150-5257
Phone (212) 527-7700